

ENTERPRISE GIS UPDATE

St. Louis County

Fall 2009



Volume 1.0 Fall 2009

Distribution: Electronic PDF format only

Welcome

Welcome to the first edition of the St. Louis County Enterprise GIS Update newsletter. The intent of this newsletter is to provide county employees with a periodic review of new and ongoing initiatives of the Enterprise GIS system of St. Louis County.

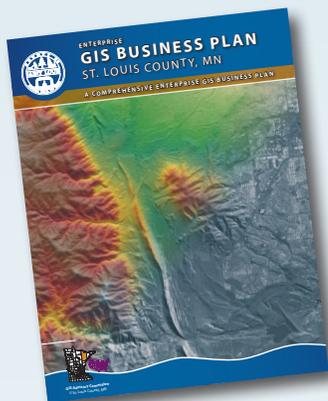
ESRI Enterprise License Agreement (ELA)

St. Louis County recently signed an agreement with the Environmental Systems Research Institute (ESRI), the makers of ArcGIS and related products, referred to as an Enterprise License Agreement or ELA. The ELA enables the county to deploy an unlimited number of desktop ArcGIS applications, as well as many extensions and server software. Previously, these products were individually licensed and cost several thousand dollars per license. The ELA will be in place for a three year period, at which time the renewal terms may be negotiated.

What this means: Potential users, both individuals and whole departments, can deploy GIS technology and software. Software training opportunities will be made available in the countywide training catalog.



Enterprise GIS Business Plan - **Being Updated!**



The GIS Strategic Plan, adopted in 2001, is under review and will be updated to reflect many changes since its adoption. The Planning and Development Department will work with key stakeholders to ensure a solid county direction is taken to address the business needs of all departments on an enterprise level to improve efficiency and productivity. The GIS Advisory Committee will provide oversight in developing the document.

In this Issue...

- ESRI Enterprise License Agreement & Plan
- About County GIS
- Core Data Infrastructure
- Data in Development
- Land Information Portal
- Department Highlight: 911 Communications
- Training Program in Development

Contact Info

General GIS Questions

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ESRI Desktop Software Installation

MIS Online Project Request



GIS Advisory Committee

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Special Thanks: Thank you to all county personnel who have helped launch this enterprise GIS team effort off to a great start!

Barbara Hayden
Planning and Development Director



ABOUT COUNTY GIS

About GIS

Many people have heard of Geographic Information System (GIS) and are just beginning to learn about the critical function it plays in the daily lives and operations of many residents, businesses and government. GIS was first developed in 1963 and is a sophisticated geospatial enabled desktop, web, and mobile technology. It allows users to manage assets and resources and assists in business operations by providing the ability to query, analyze, model, capture, update, store, and map large quantities of geospatial and non-geospatial data for a variety of functions and uses.

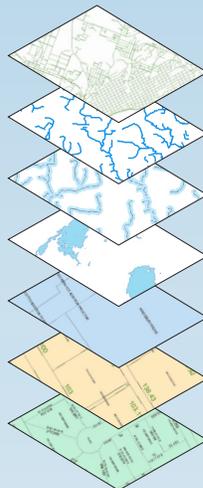
Most of the information and discussions about our world contain references to a location or area. This location-based reference is enhanced by GIS technology, which enables businesses and government to connect and utilize geospatial and non-geospatial data together to create powerful tools for users, which in our case is St. Louis County. At the county government level, it is estimated that a majority of data is location-based. Examples include land ownership, buildings, survey corners, roads, emergencies, accidents, fires, sales, as well as other data. This location-based information, or geospatial data, has become a critical infrastructure and core function of government

operations to improve enterprise productivity and efficiency.

GIS technology allows users to layer geospatial information and connect to non-geospatial information to create an enhanced geo-enabled system. Information can be added, layered and organized in any way that best suits the user. The user controls

the amount of information by adding or removing layers for further analysis of resources and assets or to mobilize resources for a given task. This can all be done from a desktop, web and/or mobile application.

GIS can be very simple, very complex or anything in-between. A user can make a simple map or perform in-depth analysis, modeling, transportation routing, reporting, charting, satellite image analysis, GPS tracking, and so on. Its application is limited only by the user's imagination.



County Use of GIS



E911 & Public Safety: GIS technology and geospatial data is used in St. Louis County's E911 Computer Aided Dispatch (CAD) and 911 addressing by providing key data for 911 dispatchers to dispatch appropriate fire, police, ambulance, and first responders of nearly 180 emergency response agencies in St. Louis County.



Natural Resource Management: GIS helps departments manage, track, and monitor forest health and growth, fire and disease assessment, sensitive wildlife identification, administration of tax forfeit lands, wetlands, floodplains, watersheds, and surveying, assessing, locating and appraising of tax forfeit property.



Community & Economic Development: The county is increasingly turning to GIS to promote community and economic development to strengthen the economic base of county communities by retaining and growing existing businesses and attracting new investment, and addressing community needs.



Land Records Management: A critical function of county government has been to track, record, and provide detailed information on land records at the parcel level. It provides tools to more efficiently conduct assessment, taxpayer services, and management of land records.



Transportation: GIS has been used in planning and implementing infrastructure projects from roads and bridges to managing assets and planning for capital improvements. It is increasingly used to support surveying and field work.



Planning: GIS assists departments conduct long-range planning by providing the ability to research, analyze, project, and map data. It also assists in parcel identification, permitting, zoning and land use administration, transportation networks, housing stock, residential, and more.



Core Enterprise Geospatial Data Infrastructure

Geospatial data is perhaps the most important component to a successful enterprise Geographic Information System (GIS). All analysis, research, mapping, and data integration starts with a high-quality set of geospatial data.

St Louis County has instituted a Core Enterprise Data Infrastructure, which follows main elements of the National and State of Minnesota guidelines for classifying all data that is stored on our spatial data servers. Categories include Imagery, Cadastral, Transportation, Addressing and Places, Elevation, Structures,

Utilities, Administrative Boundaries, Geodetic Control, Environmental, and Emergency Operations. Each category includes numerous datasets which can be incorporated in projects and viewed. Viewing available data can be accomplished through Desktop ArcCatalog within ArcMap.

A document which further outlines these categories and related sub-categories is available on the Planning and Development Department intranet page.

OVERVIEW Core Enterprise Geospatial Data Infrastructure

St. Louis County has developed, following national and state models and standards, a geospatial dataset structure to be used when developing and organizing geospatial data that is interoperable and cataloged along federal, state, and local structures.

CATEGORIES

(SDE Naming)

Imagery

Imagery typically refers to aerial photography, which is used for many purposes at St. Louis County. It is effective as a "background" layer to other geospatial data, and can be used by GIS specialists to delineate real-world features.

NSDI, MSDI, GN

IMAGE



Cadastral (Parcels)

The Cadastral (Parcel) layer at St. Louis County is the fundamental tool for analyzing land ownership information. The county is in the process of developing parcel data. This data will provide the foundation for many applications across the county pertaining to land ownership.

NSDI, MSDI, GN

CDSTRL



Transportation

Transportation features typically include roads (centerlines), trails, airports, shipping ports, and other representations of features that depict the transportation systems in the county. The road centerline layer is critical since it provides the necessary information for emergency dispatch and public works maintenance.

NSDI, MSDI, GN

TRANS



Addressing & Places

The county is planning for the development of an official Address Point layer for use in GIS systems across departments. The address dataset will be used for emergency dispatch and other law enforcement purposes, as well as a further piece of information for land use planning with the parcel data layer.

GN

ADDRPLCS



Elevation

Elevation data, typically in the form of contour maps and Digital Elevation Models, is used extensively for modeling the surface of the earth. This type of information is useful for departments such as Land, Planning, Public Works, and others as they determine appropriate land uses, forestry and construction processes.

NSDI, MSDI, GN

ELEV



Structures

Structural data, often known as planimetrics, will be developed in the future to highlight the locations and dimensions of buildings and important structures throughout the county. Along with parcel and address data, this information will be particularly useful for law enforcement, planning, and assessment purposes.

GN

STRUCT



Utilities

Utility data will be utilized for site planning, economic development, land use planning, emergency / homeland security, and many other operations at St. Louis County. Having an understanding of the locations of utility features (electric, gas, sewer, water) is key to development and emergency response.

GN

UTIL



Administrative Boundaries

Many administrative boundaries exist within St. Louis County. Examples include municipalities, state and federal management areas, county zoning districts, and many more. Geospatial analysis depends on these boundaries to render accurate results.

NSDI, MSDI, GN

ADMIN



Geodetic Control & PLSS

Geodetic control refers to precise surveys covering very large areas such as the High Accuracy Reference Network (HARN) developed in Minnesota in 1996. The Public Land Survey System is the basis for all land titles and property descriptions in Minnesota. With GPS surveying, PLS corners can be referenced to geodetic control.

NSDI, MSDI, GN

GEOD

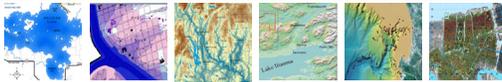


Environmental

The physical world within and around St. Louis County will be represented with numerous environmental layers. Lakes, rivers, streams, wetlands, soils, land cover, geomorphology, mining areas and many other physical earth features will be available for use in mapping and analysis. Hydrography: NSDI, MSDI. Soils: MSDI

NSDI (Hydrography), MSDI (Hydrography), GN (Hydrography & Environmental)

ENVIRO



Emergency Operations

In addition to the layers listed above, the Sheriff's, 911 Communications, and others will utilize additional geospatial data in emergency response situations such as response districts, hazard areas, critical infrastructure, and other emergency geospatial data to conduct emergency operations.

GN

E911



NSDI: National Spatial Data Infrastructure (Seven main framework themes: Imagery, Cadastral, Transportation, Elevation, Administrative Units, Geodetic Control, and Hydrography)

MSDI: Minnesota Spatial Data Infrastructure (Eight main framework themes: Imagery, Cadastral, Transportation, Elevation, Administrative Units, Geodetic Control, Hydrography, and Soils)

GN: GIS for the Nation (Fourteen main framework themes: Imagery, Cadastral, Transportation, Elevation, Administrative Units, Geodetic Control, Hydrography, Environmental, Land Use/Land Cover, Addresses, Utilities, Structures/Critical Infrastructure, Emergency Operations, and Base Map)



Data in Development

The county maintains a spatial data server, often referred to as the SDE (Spatial Database Engine) server, with hundreds of datasets available for viewing and editing. St. Louis County actively develops and maintains a large number of GIS datasets, while many other datasets are produced and maintained by outside agencies.

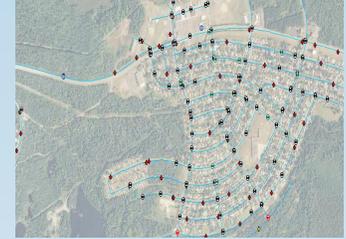
St. Louis County has been developing spatial data for 25 years, however, in 2006, the county launched the development of key enterprise Cadastral (Parcel) dataset that will be used by many county departments. Furthermore, several other data development or enhancement projects have commenced and are underway as described below.



Cadastral: Identifies all land ownership boundaries in the county. Scheduled completion, early 2010. Approximately 200,000 parcels under development.



Road Centerlines: Matching road data from multiple county departments and outside agencies for a single managed database.



Utilities: Subfoot accuracy GPS is being used to locate key utility features (water, sewer, etc.) within municipalities and special districts.



Planimetrics: Building sketches from the Assessor's Department are being converted to a geospatial layer.



(Pilot) Addressing & Places: Identifying, by points, the actual location of addresses for E911 and other applications. Landmark and common place names included. Approximately 100,000 addresses.



Zoning: Mapping zoning districts within municipalities and townships that administer their own zoning. Will be merged with county-wide zoning layer.



Hydrography: Editing existing stream and lakeshore data to include attributes from both DNR and National Hydrography datasets, with better spatial accuracy.



Imagery: Several new image datasets available or in collection. Pictometry 6-inch ortho and obliques. Spring 2009 1 ft and 1.5 ft is available countywide.



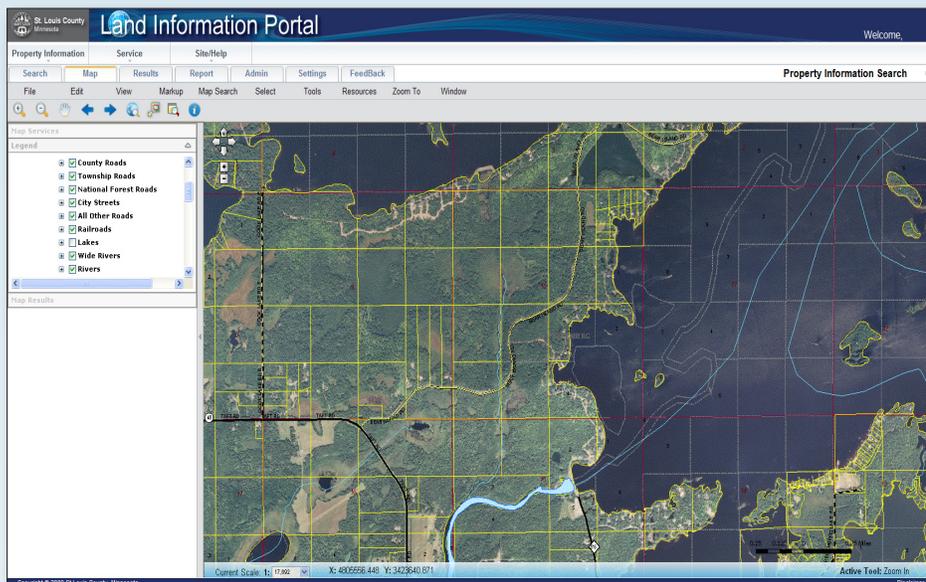


Land Information Portal (Internal County Use Only) - **BETA coming!**

The county is in the process of developing an application that will enable staff, and eventually the general public, to view numerous datasets from geospatial layers to tabular data stored in databases across the county. The Land Information Portal will be the vehicle which provides comprehensive data access to multiple users for a variety of purposes in a secured and flexible

environment. The portal is built to secure and protect sensitive data to address privacy issues that may arise.

Selected BETA users will test the application for functionality the remainder of 2009. The Land Information Portal will be available to a wide spectrum of county internal users in early 2010.



Search Land Records

The St. Louis County Land Information Portal is being designed to serve as an internet-based mapping and data retrieval system. It will provide a “one-stop shop” environment which links numerous databases and systems throughout St. Louis County government. It will leverage GIS technologies to bring mapping and geoprocessing capabilities to internal county users.

The Land Information Portal is intended to be “simple, but powerful” with numerous tools available to internal county users. Capabilities will include a multi-query search function, mapping tab, and high-end graphic reports.



SEARCH: Capable of searching across multiple inter-connected databases, using a variety of spatial and non-spatial query options.



MAP: Built around Geographic Information Systems (GIS) Framework, with customizable map displays per user input.



RESULTS: Returns large quantities of data in easy-to-use formats. Data can be exported to other formats for later use and analysis.

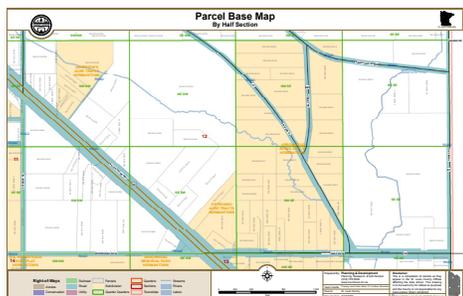


REPORTS: Ability to drill down into selected detail and generate reports.

Applications in Development

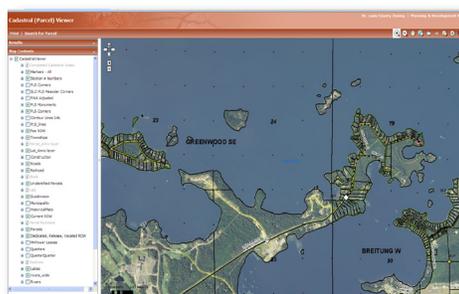
Maps-on-Demand (MOD)

An enterprise Maps-on-Demand (MOD) Application is under development. This will allow users to select a type of map and map scale to generate a high quality PDF on a county template to be used by departments and in various business processes.



Internet Web Mapping Service

This simple web mapping service will be placed on the internet site and connected to existing Auditor data on the internet web site. This will allow the county to direct the public to use this site for property information connected to a mapping engine.



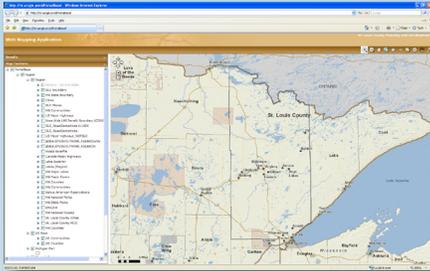
GIS WEB SERVICES

GIS Web Services

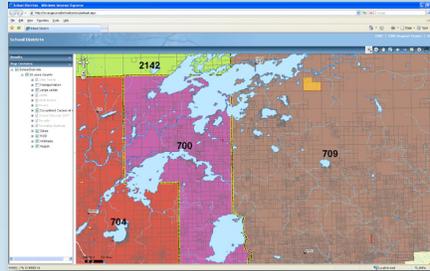
St. Louis County has developed a customized set of GIS web services for specific lines of business. GIS web services are simple customized views of spatial and tabular (non-spatial) data for a particular business need. The GIS web services can assist staff to enhance their job by providing mapping and business services for use in web-enabled applications.

Each GIS web service can be tied to department tabular data for a new view of the department's data. Below are some web service examples that show how the data can be customized for highly targeted uses and users. These web services will be available through the Land Information Portal. Additional information on these web services can be found on the Planning and Development Department's intranet site.

Enterprise Web Services

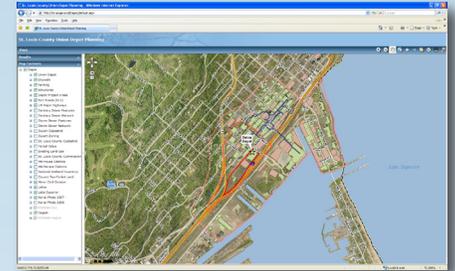


Base Map: This web service is a general base map for St. Louis County users.



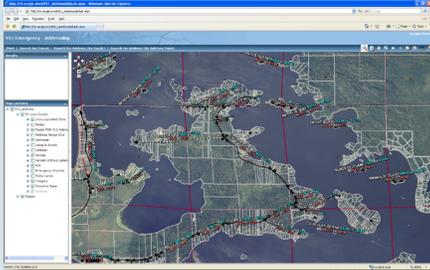
QA/QC (Quality Assurance/Quality Control) This web service helps departments track potential tabular database errors and examine potential corrections, if needed.

Project Based Web Services

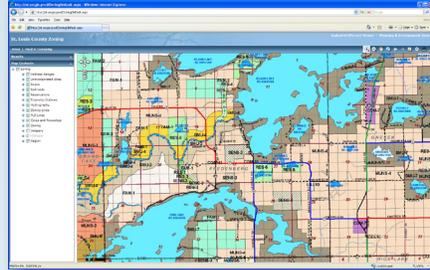


St. Louis County Union Depot This web service is used for site and area master planning for the St. Louis County Union Depot.

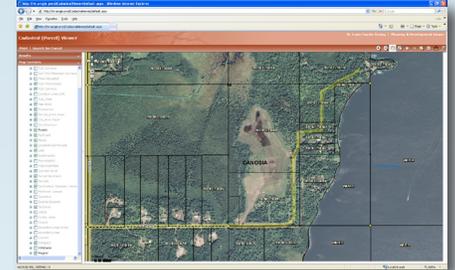
Department Web Services



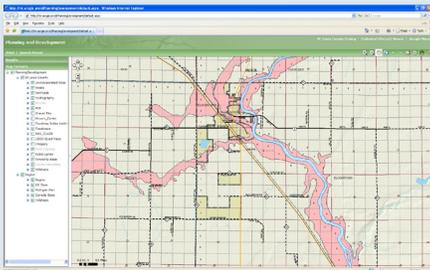
911 Addressing: This web service is used in conjunction with the task of assigning 911 addresses.



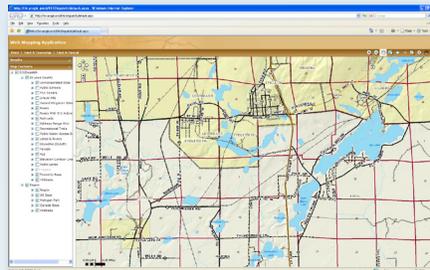
Zoning Viewer: This web service enables physical planners in the Planning and Development Department to locate and view zoning information for permitting activities.



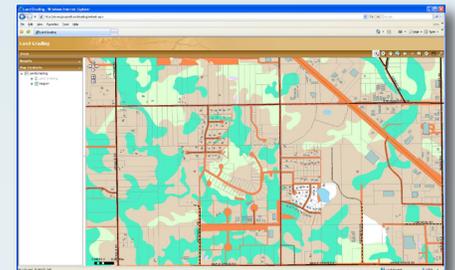
Parcel Viewer: This web service is used to locate and identify parcels and associated data in the Cadastral Layer.



Data Viewer: This web service is used by physical planners in the Planning and Development Department to locate wetlands, airports, and other areas of interest.



911 Dispatch: This 911 Dispatch web service aids dispatchers to locate an emergency location quickly with an interactive map.



Land Grading (Assessor's Pilot): This web service is used by the Assessor's Department to develop a test pilot to process information to determine land values based on available information.



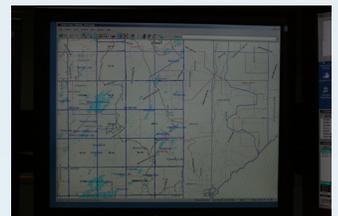
DEPARTMENT HIGHLIGHT

Department Highlight - 911 Communications Dispatch

St. Louis County's 911 Communications centers in Duluth and Virginia both operate a Computer Aided Dispatch (CAD) system that manages inputs from a variety of sources to assist dispatchers in guiding emergency response for police, fire, ambulance, first responders, and law enforcement agencies to the aid of 911 callers.

Data processed through the CAD system is displayed in a mapping environment known as Maverick. The Maverick system is essentially a GIS viewing and analysis package that is geared towards E911 dispatch. The cartographic display and query functions of Maverick operate similarly to ESRI and other common GIS programs. However, Maverick also receives locational data directly from the CAD for displaying addresses, locations of incidents, and locations of responding units.

Beginning in spring of 2009, GIS staff members from the Planning and Development Department have been assisting the 911 Communications centers by upgrading the available spatial data for the Maverick mapping program. Dispatchers are now able to utilize many of the same datasets that are available to county GIS Specialists. In the E911 discipline, where seconds count, having this wealth of information available can represent a positive difference in how quickly and adequately an incident response is handled.

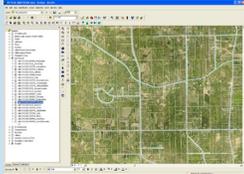


TRAINING & TECHNICAL ASSISTANCE

Training Program

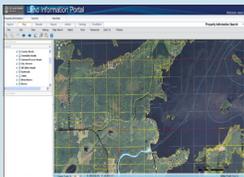
Because new software, applications, and data are available to a growing audience at St. Louis County, training will be an important step in advancing the Enterprise GIS vision through success.

Training on a number of topics is or will be available by the county through the quarterly training series offered through Employee Development.



ArcGIS Desktop Training

This training will introduce users to ArcGIS software, geospatial data, and how to use GIS to make their jobs easier and more efficient. Advanced training classes will be offered in mid-2010.



Web Land Information Portal Training

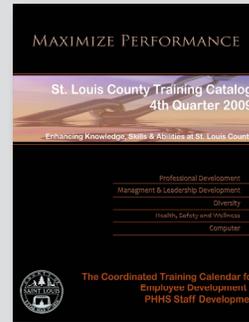
Training is being developed on how to use the portal functions – search, map, results, and reports. Look for more information in the 1st Quarter, 2010 Training Catalog.



Technical Assistance

Questions about ArcGIS software?
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Note: Quick-reference guides for ArcGIS and the Land Information Portal are in development and will be available online.



Sign up and register for the training through **Employee Development**

4th, Quarter Training - Available!

Dates/Locations

12/15/2009

Employee Development Training Lab

GSC 705 - Duluth

1:00 PM - 4:00 PM

Register by: 11/24/2009

12/16/2009

Northland Office Building - Virginia

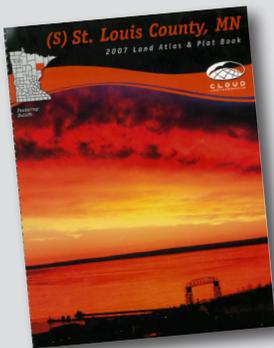
9:00 AM - 12:00 PM

Register by: 11/25/2009

Target Audience

All employees that use GIS technology in their work

Product in Review - Plat Book Update



As the County GIS Cadastral (Parcel) database is nearing completion in 2010, the county Planning and Development Department is undertaking a review of what it would take to create an in-house plat book. The department will be taking over the creation and management of the plat book from the County Extension Office.

Years Plat Book Created: 1993, 1996, 1999, 2002, 2007

GIS Web Site - In Development

Intranet

The County will be developing an intranet web site for enterprise GIS activities this fall. Stay tuned.

Internet

The County will be developing an internet web site. The hope is that this web site will be available fall/winter.

About this Newsletter: This newsletter is only intended to provide a general update on county GIS activities.

Acknowledgements: This newsletter was prepared with individual knowledge, expertise, and guidance. Thank you to all.

Prepared by:

St. Louis County Planning and Development

Revision 10-2009



St. Louis County, Minnesota
United States

